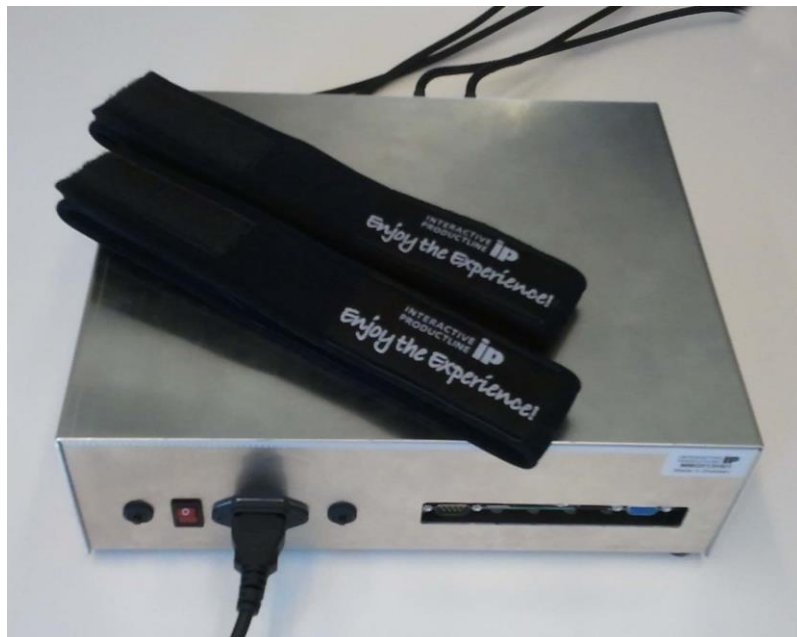


Mindmove Integrated

User Manual



**INTERACTIVE
PRODUCTLINE ip**

Interactive Productline IP AB • Järnvägsgatan 36 • SE-131 54 Nacka • Sweden
Phone +46 709 82 00 24 • info@i-p.se • www.i-p.se

Safety Instructions for Mindmove

General

- Read all safety and operating instructions before operating Mindmove
- Retain the safety and operating instructions for future reference.
- Heed all warnings
- Install in accordance with the instructions below.
- Follow all operating and use instructions.

WARNING

Electric shock or injury

- Mindmove should be used with a grounded outlet power cord and plug.
- Make sure all connections to Mindmove are made carefully and inserted into the correct locations only.
- Unplug from outlet when not in use and before servicing.
- Do not use this apparatus near water.
- Do not expose this apparatus to rain or moisture.
- No objects filled with liquids shall be placed on the apparatus.
- The apparatus shall not be exposed to dripping or splashing.
- Clean apparatus only with dry cloth.
- Turn off before unplugging.
- Do not unplug by pulling on cord.
- To unplug, grasp the plug, not the cord.
- Hold plugs straight when inserting them into a socket.
- Do not put any object into openings.
- Do not use with damaged cord or plug.
- Do not handle plug or appliance with wet hands.
- Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners.
- Protect the power cord for being walked on or pinched.
- Do not run appliance over cord.
- Keep cord away from heated surfaces.
- Refer all servicing to qualified service personnel.

Mindmove hardware precautions

- Do not install Mindmove near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
- Do not disassemble or try to repair the Mindmove or components. Doing so voids the warranty.
- Do not store the Mindmove in a humid place, on the floor or in any location where it may collect dirt, dust, lint, etc.
- Do not drop, hit or otherwise abuse the Mindmove or components.
- Do not expose the Mindmove or any of the Mindmove components to extreme heat or cold.
- Do not rapidly turn the power switch on and off
- If a VGA contact is inserted, do not wiggle the VGA contact up and down. When disconnecting a VGA contact, pull straight out and wiggle the contact gently sideways.



Unpack

- One Mindmove case
- One power cable
- One to four headbands depending on version of Mindmove.

Label plate with serial number is placed at the back of the unit.

Using Instructions

Read the whole manual carefully before using Mindmove

You should not use Mindmove at all if you have any kind of medical condition.

Do not use Mindmove during more than two sessions per day at a maximum of 30 minutes per session. If you have any doubts what so ever, please contact a medical specialist.

Connectors

To receive the data stream from Mindmove there are two options. It makes no difference which one is used; the same data will be transferred.

Network connectivity

Mindmove uses 10/100 BASE-TX Ethernet with a RJ-45 connector. When started, Mindmove will use a statically configured private IP address of 192.168.0.77 and wait for a TCP connection on port 7777. You will have to configure your own network accordingly to connect over TCP/IP.

For example

IP address: 192.168.0.10

Subnet mask: 255.255.255.0

Default gateway: 192.168.0.1

When you connect to port 7777, Mindmove will begin to transmit data automatically.

There is no support yet for automatically configuring the IP address of Mindmove via e.g. DHCP.

Serial port:

Mindmove uses a RS-232 with a DB9 connector. You must use a null-modem cable to connect so that the RX/TX pins are switched.

Use these settings to configure the serial port:

Speed: 57600 bit/s

Data bits: 8

Parity: none

Stop bits: 1



Data provided

Mindmove provides two numeric values continuously;

- one signal for the level of focus and
- one signal for the level of energy.

New values are provided every 0.5 s. Control your device with the signal for focus. Use the signal for energy to provide additional information to the user.

For every headband 4 lines will be sent as in the following:

```
HEADBAND<X>{  
energy=<E>  
focus=<F>  
}
```

X is a number from 1 to 4 depending on version of Mindmove

E is a number that is always positive and represents the estimated energy.

F is a signed number and represents the estimated focus.

Primarily the Focus value should be used in visualisations and representations of the performance of the person wearing the headband. Positive values are good and negative values are bad.

Energy shows relaxation but can also indicate artefacts from e.g. muscle movements. Lower values are good, and higher values are bad. If the energy value <E> is above 1.0 the focus value <F> will not be positive.

An energy level above 1.0 can be due to muscle movements or a stressed brain

The Energy value should only be used as additional guiding information about the performance.

Below is an *example of data* that might have been received from a Mindmove with 4 headbands during less than a second.

```
HEADBAND1{  
energy=0.3903572  
focus=115.17804  
}  
HEADBAND2{  
energy=0.11908199  
focus=10.802391  
}  
HEADBAND3{  
energy=0.08033993  
focus=64.44954  
}  
HEADBAND4{  
energy=3.4707646  
focus=-23.038338  
}
```

Start Mindmove

1. Place your Mindmove in a suitable place. ¹
2. Plug headbands into Mindmove.
NB! Any headband not in use should be removed from Mindmove and the plug inserted in its place.
3. Connect Mindmove Integrated via any of the connectors listed above.
4. Put on the headband; they should be placed horizontally above your eyebrows with the sensors against your forehead. Make sure there are no hair in between the sensors and your skin. You do not need to tighten the headband hard.
5. Start Mindmove by turning on the power switch. It takes about two minutes for Mindmove to start and begin to transmit data.

Maintenance of Mindmove Headbands

To keep the headbands fresh, working and hygienic, there are a few tips to consider

- For cleaning the headbands, use a detergent, water and a cloth or a sponge. Do not use alcohol to clean the headbands.
- Soak the cloth or the sponge and rub the headbands to clean them. Rinse the cloth or sponge with clean water, and wipe the headbands clean.
- If the headbands are very dirty, they can be wetted, rubbed and left in open air to dry.
- The headbands have wires inside, be careful and do not bend them too much so that wires will disconnect from the sensors.
- When cleaning the headbands, do not wet the connector at the end of the cable.
- If the metal sensors are very dirty, you can use a common kitchen sponge aimed for sinks or tiles to rub the sensors.

¹ Mindmove registers brain waves, which are very weak electrical signals. Mindmove may therefore be sensitive to EMC/EMI from other nearby electrical equipment. Please bear that in mind when choosing location for your Mindmove.

Trouble shooting Mindmove

Symptom: It seems impossible to achieve positive focus values.

Reason 1: The headband is not correctly put on

Action 1: Make sure there is no hair between the sensors and the forehead. Make sure the whole sensor is in contact with the forehead. (If you have a very steep forehead you might improve the connection by moving it down towards the eyebrows).

Reason 2: The headband is not correctly connected

Action 2: Make sure that the headband is firmly connected to the Mindmove unit.

Reason 3: The headband is broken

Action 3: Replace the headband. You can measure the resistance between the sensors and the pins in the contact with an ohmmeter, If it never shows a momentarily value of 2 ohm or less the headband is broken.

Reason 4: Other electrical equipment or cords are disturbing Mindmove.

Action 4: Move Mindmove or the source of disturbance.

Reason 5: You are very stressed.

Action 5: Use your personal technique to relax before trying again.

Reason 6: You have a medical condition or you are under the influence of drugs or alcohol

Action 6: Do not use Mindmove.

Symptom: You can not connect to Mindmove using network.

Reason: You are not using the correct network settings.

Action: Make sure to configure your network and to connect to the specified address and port for Mindmove according to the instructions in this manual above.

Symptom: You can not connect to Mindmove using serial port.

Reason 1: You are not using a null-modem cable.

Action 1: Make sure the serial cable is a null-modem cable so that the RX/TX pins are switched.

Reason 2: You are not using the correct serial port settings.

Action 2: Make sure to configure your serial port and check that you use the correct number for the serial port attached to Mindmove according to the instructions in this manual above.

Disclaimer

Mindmove gathers and analyzes brain wave signals to provide visual feedback. Mindmove is not a medical device and is not intended for use in clinical medical applications. Interactive Productline IP AB makes no warranties, express or implied, including but not limited to, any implied warranty of merchantability or fitness for a particular purpose. The User is responsible for determining whether this product is fit for a particular purpose. Interactive Productline IP AB makes no claims as to potential medical or therapeutic benefits.

Interactive Productline IP AB reserves the right to make changes, corrections and/or improvements to the Information, and to the products and programs described in such information, at any time without notice.

